

Notice of Allowability

Application No.

09/966,372

Examiner

Tuan H. Nguyen

Applicant(s)

UHLIK ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 09/27/2001.
2. ☒ The allowed claim(s) is/are 1-40.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

CURTIS KUNTZ

PROSECUTORY PATENT EXAMINER
BIOLOGY CENTER 2600

DETAILED ACTION

REASONS FOR ALLOWANCE

1. Claims 1-40 are allowed over the prior art record.
2. The following is an examiner's statement of reasons for allowance:

Regarding claim 1, Scherzer et al. (U.S PUB. No. 2001/0031647, hereinafter, "Scherzer") teaches an antenna array for communicating information via a wireless microwave link between two locations, multiple antennas or antenna elements are utilized in the forward link to derive channel estimation information useful in forming antenna beams for subscriber units in communication to provide increased forward link capacity and/or improved forward signal link quality.

Judson et al. (U.S PUB. No. 2002/0119790, hereinafter, "Judson") teaches an antenna array comprising: at least two antenna elements each to transmit information as a narrow beam signal to be directed toward a receiver at a remote location, the mobile unit includes a system for generation of position information and transceiver for transmitting the position information, the base station is adapted to receive position information from a remote unit and provide a received position signal in response thereto, the base station is further equipped with a mechanism for directing a beam in response to the received position signal, the mechanism for directing the beam is a

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smart antenna system including an antenna array and a beamforming network for driving the array to output the directed beam.

Ramasasthy (U.S PAT. 5,991,345) teaches an antenna elements including at least one antenna element to transmit a narrow beam signal toward a redirection point different from the receiver, providing alternative or additional signal paths, for signals being transferred between gateways and communication system users through one or more a satellite repeaters. These additional signal paths are used to establish and maintain adequate signal diversity as well as certain signal links by remote subscribers in heavy urban area.

However, the prior art made of record, alone or in combination, fails to clearly teach or fairly suggest an antenna array for communicating information via a wireless microwave link between two locations, the antenna array comprising: at least two antenna elements each to transmit narrow beam signal to be directed toward a receiver at a remote location, at least one antenna element to transmit a narrow beam signal toward a redirection point different from the receiver; and a redirection device located at the redirection point to receive the narrow beam signal from the at least one antenna element and to direct the received narrow beam signal toward the receiver, wherein the redirection point is located such that the narrow beam signals from the at least two antenna elements converge and overlap to form an interference pattern proximate to the receiver, the interference pattern includes peaks and nulls having a peak-to-peak spacing narrower than a width of each of the received narrow beam signals, in

combination with other limitations, as specified in the independent claim 1 and further limitations of their respective dependent claims 2-12, 14-15, and 17-26.

Regarding claim 13, Scherzer et al. (U.S PUB. No. 2001/0031647, hereinafter, "Scherzer") teaches a communication system for communicating information via a wireless link between a first location and a second location comprising: a first antenna array arranged at the first location, multiple antennas or antenna elements are utilized in the forward link to derive channel estimation information useful in forming antenna beams for subscriber units in communication to provide increased forward link capacity and/or improved forward signal link quality.

Judson et al. (U.S PUB. No. 2002/0119790, hereinafter, "Judson") teaches at least two antenna elements each to transmit information as a narrow beam signal to be directed toward a second location, the antenna elements includes at least one antenna element to transmitting the a narrow beam signal toward the second location. The base station is adapted to receive position information from a remote unit and provide a received position signal in response thereto. The base station is further equipped with a mechanism for directing a beam in response to the received position signal, the mechanism for directing the beam is a smart antenna system including an antenna array and a beamforming network for driving the array to output the directed beam.

Ramasastri (U.S PAT. 5,991,345) teaches an antenna elements including at least one antenna element to transmit a narrow beam signal toward a redirection point different from the second location, providing alternative or additional signal paths, for

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signals being transferred between gateways and communication system users through one or more a satellite repeaters. These additional signal paths are used to establish and maintain adequate signal diversity as well as certain signal links by remote subscribers in heavy urban area.

However, the prior art made of record, alone or in combination, fails to clearly teach or fairly suggest a communication system for communicating information via a wireless link between a first location and a second location comprising: a first antenna array arranged at the first location including; at least two antenna elements each to transmit information as a narrow beam signal toward a second location, the antenna elements including at least one antenna element to transmit a narrow beam signal toward a redirection point different from the second location; and a redirection device located at the redirection point to reflect the narrow beam signal from the at least one antenna element and to redirect the received narrow beam signal toward the second location; wherein the narrow beam signals directed towards the second location are spaced apart by a separation distance at the first location that results in an interference pattern being formed at the second location with peak to peak spacing narrower than the individual antenna element beams, the interference pattern including peaks and nulls; and a second antenna array arranged at the second location including at least two antenna elements to receive the narrow beam signals from the first antenna array, in combination with other limitations, as specified in the independent claim 13 and further limitations of their respective dependent claim 16.

Regarding claim 27, Scherzer et al. (U.S PUB. No. 2001/0031647, hereinafter, "Scherzer") teaches a method of communicating information via a wireless link between a first location and a second location, multiple antennas or antenna elements are utilized in the forward link to derive channel estimation information useful in forming antenna beams for subscriber units in communication to provide increased forward link capacity and/or improved forward signal link quality.

Judson et al. (U.S PUB. No. 2002/0119790, hereinafter, "Judson") teaches the method comprising: transmitting a first narrow beam signal from the first location to be directed towards a receiver at the second location, the mobile unit includes a system for generation of position information and transceiver for transmitting the position information, the base station is adapted to receive position information from a remote unit and provide a received position signal in response thereto, the base station is further equipped with a mechanism for directing a beam in response to the received position signal, the mechanism for directing the beam is a smart antenna system including an antenna array and a beamforming network for driving the array to output the directed beam.

Ramasastri (U.S PAT. 5,991,345) teaches transmitting at least a second narrow beam signal from the first location towards a first redirection point associated with the first location, providing alternative or additional signal paths, for signals being transferred between gateways and communication system users through one or more satellite repeaters, these additional signal paths are used to establish and maintain

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adequate signal diversity as well as certain signal links by remote subscribers in heavy urban area.

However, the prior art made of record, alone or in combination, fails to clearly teach or fairly suggest a method of communicating information via a wireless link between a first location and a second location, the method comprising: transmitting a first narrow beam signal towards a second location, transmitting at least a second narrow beam signal from the first location towards a first redirection point associated with the first location; redirecting the second narrow beam signal from the first redirection point towards the receiver; and spacing the first and second narrow beam signals apart by a predetermined separation distance at first location such that the narrow beam signals from the first location converge and overlap to form an interference pattern proximate to the receiver, the interference pattern including peaks and nulls having a peak-to-peak spacing narrower than a width of each of the received narrow beam signals, in combination with other limitations, as specified in the independent claim 27 and further limitations of their respective dependent claims 28-40.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. Any response to this action should be mailed to:

Mail Stop _____ (Explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Facsimile responses should be faxed to:

(571) 273-8300

Hand-delivered responses should be brought to:

Customer Service Window

Randolph Building

401 Dulany Street

Alexandria, VA 22313

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan H. Nguyen whose telephone number is (571)272-8329. The examiner can normally be reached on 8:00Am - 5:00Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on (571)272-7499. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tuan Nguyen

Examiner

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SENIOR PATENT EXAMINER
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